CH2M HILL
2485 Natomas Park Drive
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CH2MHILL

July 1, 2002

Ms. Kristy Chew
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

RE: Data Responses, Informal Set 2
Cosumnes Power Plant (01-AFC-19)

On behalf of the Sacramento Municipal Utility District, please find attached 12 copies and one original of the Informal Data Responses, Set 2, in response to Staff's Data Response and Issues Resolution Workshops that occurred in June.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

c: Colin Taylor/SMUD
Kevin Hudson/SMUD
Steve Cohn/SMUD

COSUMNES POWER PLANT (01-AFC-19)

INFORMAL DATA RESPONSE, SET 2

Submitted by

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

July 1, 2002

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

Technical Area: Air Quality
CEC Author: Tuan Ngo, P.E.
CPP Author: Colin Taylor

BACKGROUND

The following question was asked at the Data Response and Issues Resolution Workshop held on June 13, 2002.

DATA REQUEST

AQ-1. Provide an estimate of how many kw of solar panels SMUD has installed in its service territory.

Response: SMUD surpassed 10,000 kW of PV panel installation in 2001, installing more than 1,670 kW during that year. The 10,000 kW represents 1,000 installed systems. SMUD plans to complete more than 2,200 kW of PV systems in 2002, to arrive at a total of 12,200 kW.

Technical Area: Biological Resources
CEC Authors: Melinda Dorin and Rick York
CPP Author: EJ Koford

BACKGROUND

The following questions were asked at the Data Response and Issues Resolution Workshop held on June 12, 2002.

DATA REQUEST

BIO-1. Please ensure that none of the herbicides on CDFG's "prohibited" list will be used at the plant.

Response: SMUD will commit to a condition that does not allow use of the herbicides on the list provided by CDFG at the June 12 meeting.

BIO-2. Please make sure that all ephemeral creeks (i.e., dashed blue lines on the topographical maps) are included in SAA application.

Response: SMUD will amend its current SAA application to include the ephemeral creeks at the project site and others as appropriate.

BIO-3. Please provide a Revegetation Plan for the gas pipeline.

Response: A Preliminary Revegetation Plan for the pipeline is under preparation. It should be ready by July 18.

BIO-4. Please verify that the laydown area was surveyed for California Tiger Salamander.

Response: Dr. Mark Jennings in a telephone conversation of 6/28/02 confirmed that the laydown area was evaluated for CTS.

BIO-5. What did Mark Jennings (Rana Resources) use to identify the species of snakes found?

Response: Dr. Mark Jennings in a telephone conversation of 6/28/02, confirmed that the two dead garter snakes were identified based on their color—in particular—he noted red markings consistent with the reported identification.

BIO-6. Please provide an analysis of an alternative gas pipeline alignment on Dwight Road that would avoid the vernal pool mitigation bank.

Response: This information was provided in Data Response #193, Data Response Set 3A.

BIO-7. Regarding Data Response #205 (Set 3A), looking at possible compensation for giant garter snake and vernal pool fairy shrimp, connect the known populations with corridors.

Response: Any mitigation proposal for GGS and VPFS would include an assessment of the values of connectivity. Although SMUD has not confirmed the mitigation plan, all options being considered are connected to existing populations to provide for these corridors.

Technical Area: Noise
CEC Author: Jim Buntin
CPP Authors: Mark Bastasch and Joe Pennington

BACKGROUND

Questions were asked at the Data Response and Issues Resolution Workshop held on June 11, 2002, question NO-3 was received after the workshops.

DATA REQUEST

NO-1. Please provide additional information about the gas compressors that will be used at the Winters and Valve #190 Crosstie compressor stations.

Response: Due to the size of the compressor, the engineering team determined that the unit at both Winters and Valve #190 Crosstie will have to be a reciprocating-style compressor. The reciprocating compressor would need to be custom-ordered and engineered to meet specifications. Therefore, catalog information is not currently available. Proper engineering will provide the flexibility of the unit to meet noise criteria as discussed in AFC Supplement B, and with the block enclosure is expected to be adequate in meeting the required noise levels at the nearest residence. As stated in during the workshop, the compressors are anticipated to be electric driven.

NO-2. Please take ambient noise measurements at the Peasha's house and coordinate the data collection effort with Mr. & Mrs. Peasha and Jim Buntin.

Response: On Wednesday, June 19, 2002, CH2M HILL personnel met with Mrs. Peasha and conducted noise monitoring at the back of her home. The monitoring was conducted with the same equipment used to conduct the ambient monitoring for the AFC (Bruel & Kjaer 2236, Type 1). Data was recorded in terms of 10-minute Leq, L10 and L90, as was done for the AFC. On-site 5-minute average wind speed was also recorded. The monitoring period encompassed two nights and started at approximately 7 p.m. on June 19th and ended at approximately 9 a.m. on June 21st. Mr. Jim Buntin met with Mrs. Peasha the evening of June 20th and verified that the equipment was set in an appropriate location.

Temperature varied between the low 50 °F during the night and the mid- to high 90 °F during the daytime. Skies were clear during both the day and nighttime periods and humidity was low. Winds varied, but were generally below 8 mph. No nighttime noise from neighboring agricultural operations was observed by CH2M HILL, nor noted by Mrs. Peasha. A plot of the results is presented in Figure NO2-1. Table NO2-1 presents the

10-minute data. The 10 p.m. to 7 a.m. average L90 were approximately 35 dBA and 32 dBA for the first and second nights, respectively. The average L90 of the two nighttime periods was approximately 34 dBA.

Figure NO2-1
Noise Monitoring at Residence on Kirkwood
6/19/02 - 6/21/02

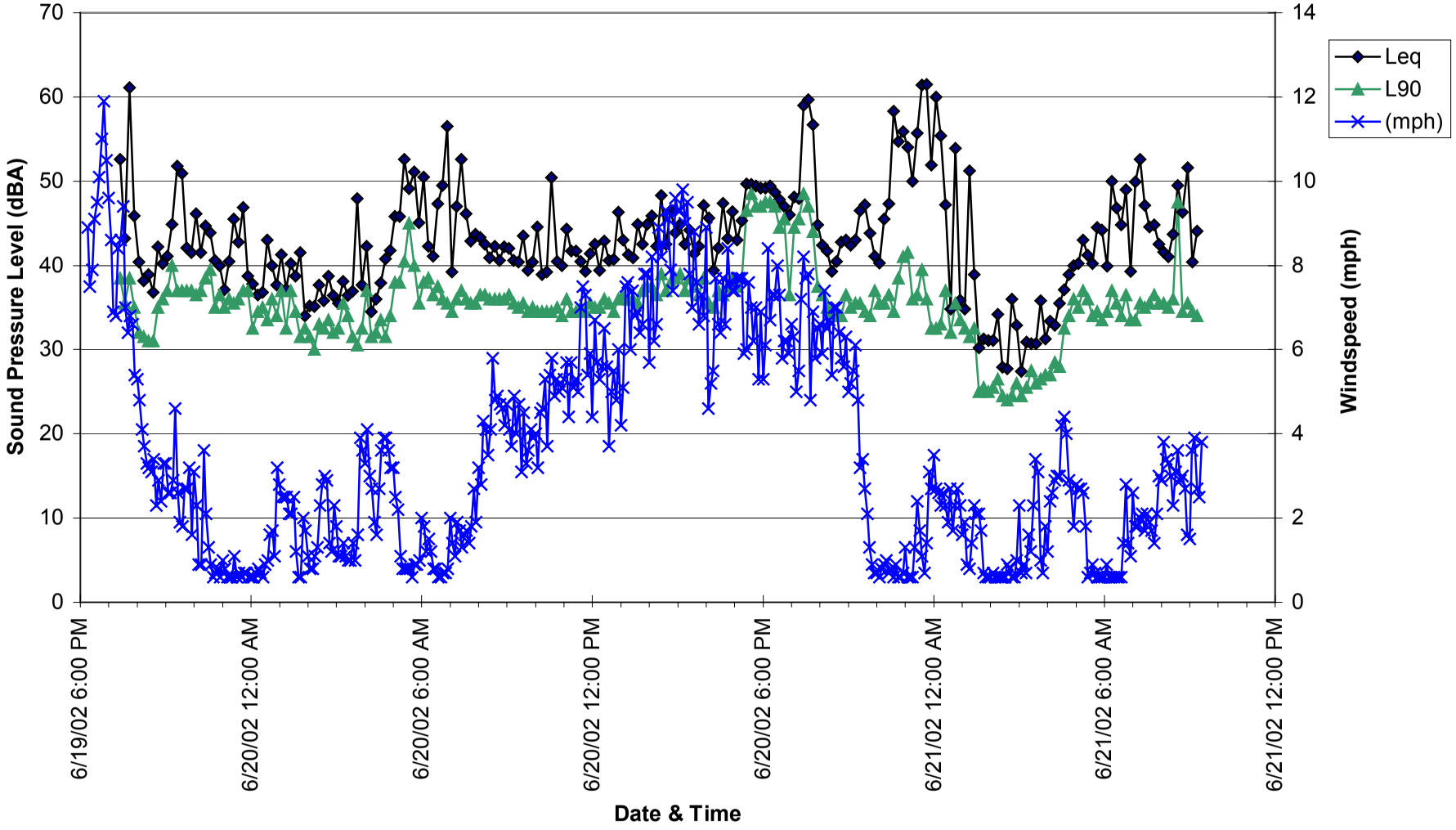


Table NO2-1
10-minute Sound Pressure Levels at Residence on Kirkwood (dBA)

Date & Time	Leq	L10	L90	Date & Time	Leq	L10	L90
6/19/02 7:23 PM	52.6	49	38.5	6/20/2002 3:53 AM	37.7	37	32.5
6/19/02 7:33 PM	43.2	46.5	35.5	6/20/2002 4:03 AM	42.3	45.5	37
6/19/02 7:43 PM	61.1	53	38.5	6/20/2002 4:13 AM	34.5	36	31.5
6/19/02 7:53 PM	45.9	49.5	35	6/20/2002 4:23 AM	36	37.5	32
6/19/02 8:03 PM	40.4	43.5	32	6/20/2002 4:33 AM	37.9	40.5	33.5
6/19/02 8:13 PM	38.2	41	31.5	6/20/2002 4:43 AM	40.8	40.5	31.5
6/19/02 8:23 PM	38.9	41.5	31	6/20/2002 4:53 AM	41.8	41.5	34
6/19/02 8:33 PM	36.8	40.5	31	6/20/2002 5:03 AM	45.8	45	38
6/19/02 8:43 PM	42.2	44	35	6/20/2002 5:13 AM	45.8	46.5	38
6/19/02 8:53 PM	40.2	42	36	6/20/2002 5:23 AM	52.6	53	40.5
6/19/02 9:03 PM	41.1	42.5	37	6/20/2002 5:33 AM	49.1	51.5	45
6/19/02 9:13 PM	44.9	46.5	40	6/20/2002 5:43 AM	51.1	52	40
6/19/02 9:23 PM	51.8	45.5	37	6/20/2002 5:53 AM	45.1	45	35.5
6/19/02 9:33 PM	50.9	44.5	37	6/20/2002 6:03 AM	50.5	50	38
6/19/02 9:43 PM	42.1	41.5	37	6/20/2002 6:13 AM	42.3	44.5	38.5
6/19/02 9:53 PM	41.5	44	37	6/20/2002 6:23 AM	41.1	44.5	36.5
6/19/02 10:03 PM	46.1	42.5	36.5	6/20/2002 6:33 AM	47.3	48	37.5
6/19/02 10:13 PM	41.5	44.5	37	6/20/2002 6:43 AM	49.5	51	36
6/19/02 10:23 PM	44.7	44	38.5	6/20/2002 6:53 AM	56.5	51.5	35.5
6/19/02 10:33 PM	43.9	46	39.5	6/20/2002 7:03 AM	39.2	42	34.5
6/19/02 10:43 PM	40.6	43.5	35	6/20/2002 7:13 AM	47	45.5	36
6/19/02 10:53 PM	40	42	36.5	6/20/2002 7:23 AM	52.6	57.5	37
6/19/02 11:03 PM	37.1	38.5	35	6/20/2002 7:33 AM	46.1	49.5	36
6/19/02 11:13 PM	40.5	43.5	36	6/20/2002 7:43 AM	42.9	43.5	35.5
6/19/02 11:23 PM	45.5	44.5	35.5	6/20/2002 7:53 AM	43.7	40	35.5
6/19/02 11:33 PM	42.8	44.5	36	6/20/2002 8:03 AM	43.3	46.5	36.5
6/19/02 11:43 PM	46.9	52	37	6/20/2002 8:13 AM	42.5	44.5	36.5
6/19/02 11:53 PM	38.7	40	37	6/20/2002 8:23 AM	40.9	43.5	36
6/20/02 12:03 AM	37.8	40.5	32.5	6/20/2002 8:33 AM	42.3	45.5	36
6/20/02 12:13 AM	36.5	38	34.5	6/20/2002 8:43 AM	40.6	43.5	36
6/20/02 12:23 AM	36.8	37.5	35	6/20/2002 8:53 AM	42.2	44	36
6/20/02 12:33 AM	43	47	33.5	6/20/2002 9:03 AM	42	46	36.5
6/20/02 12:43 AM	40	42.5	36	6/20/2002 9:13 AM	40.6	43.5	35.5
6/20/02 12:53 AM	37.7	39.5	34	6/20/2002 9:23 AM	40.4	42.5	35
6/20/02 1:03 AM	41.3	43	37	6/20/2002 9:33 AM	43.5	44.5	35.5
6/20/02 1:13 AM	37.2	40	32.5	6/20/2002 9:43 AM	39.4	41	34.5
6/20/02 1:23 AM	40.2	42	37	6/20/2002 9:53 AM	40.4	42	35
6/20/02 1:33 AM	38.7	41	34.5	6/20/2002 10:03 AM	44.6	43	34.5
6/20/02 1:43 AM	41.5	40	31.5	6/20/2002 10:13 AM	38.9	41	34.5
6/20/02 1:53 AM	34	35	32.5	6/20/2002 10:23 AM	39.2	41	34.5
6/20/02 2:03 AM	35.2	37	31.5	6/20/2002 10:33 AM	50.4	47	34.5
6/20/02 2:13 AM	35.1	38.5	30	6/20/2002 10:45 AM	40.5	44	35
6/20/02 2:23 AM	37.7	39	33	6/20/2002 10:55 AM	40	44	34
6/20/02 2:33 AM	35.8	37.5	32.5	6/20/2002 11:05 AM	44.3	46	36
6/20/02 2:43 AM	38.7	41.5	33.5	6/20/2002 11:15 AM	41.7	40	34.5
6/20/02 2:53 AM	36.4	37.5	32	6/20/2002 11:25 AM	41.7	42.5	34.5
6/20/02 3:03 AM	35.5	37	32.5	6/20/2002 11:35 AM	40.5	41	35
6/20/02 3:13 AM	38.1	39.5	35.5	6/20/2002 11:45 AM	39.3	38.5	34.5
6/20/02 3:23 AM	36.4	37.5	34	6/20/2002 11:55 AM	41.4	42.5	35.5
6/20/02 3:33 AM	36.9	40.5	31.5	6/20/2002 12:05 PM	42.5	46.5	35
6/20/02 3:43 AM	47.9	40.5	30.5	6/20/2002 12:15 PM	39.4	40	35

Table NO2-1
10-minute Sound Pressure Levels at Residence on Kirkwood (dBA)

Date & Time	Leq	L10	L90	Date & Time	Leq	L10	L90
6/20/2002 12:25 PM	42.9	45.5	36	6/20/2002 8:55 PM	43	46	36.5
6/20/2002 12:35 PM	40.6	43	35.5	6/20/2002 9:05 PM	42.4	45.5	35
6/20/2002 12:45 PM	40.7	44	34.5	6/20/2002 9:15 PM	43	43.5	35.5
6/20/2002 12:55 PM	46.3	48.5	36	6/20/2002 9:25 PM	46.5	46.5	35.5
6/20/2002 1:05 PM	43	46	36.5	6/20/2002 9:35 PM	47.2	46	34.5
6/20/2002 1:15 PM	41.3	42	36	6/20/2002 9:45 PM	43.8	43	34
6/20/2002 1:25 PM	40.9	44	36	6/20/2002 9:55 PM	41.1	43.5	37
6/20/2002 1:35 PM	44.9	43	35.5	6/20/2002 10:05 PM	40.3	44	35.5
6/20/2002 1:45 PM	42.5	44	37	6/20/2002 10:15 PM	45.5	49.5	35.5
6/20/2002 1:55 PM	44.9	45.5	37.5	6/20/2002 10:25 PM	47.3	52	36.5
6/20/2002 2:05 PM	45.9	47	37.5	6/20/2002 10:35 PM	58.3	62.5	34.5
6/20/2002 2:15 PM	42.3	44.5	36.5	6/20/2002 10:45 PM	54.7	57	38.5
6/20/2002 2:25 PM	48.3	49	39	6/20/2002 10:55 PM	55.9	61.5	41
6/20/2002 2:35 PM	42.5	44.5	37	6/20/2002 11:05 PM	54	58	41.5
6/20/2002 2:45 PM	46.5	47	38	6/20/2002 11:15 PM	50	55.5	36
6/20/2002 2:55 PM	43.9	47	38.5	6/20/2002 11:25 PM	55.7	62	36.5
6/20/2002 3:05 PM	44.9	48	39	6/20/2002 11:35 PM	61.4	67	39.5
6/20/2002 3:15 PM	42.5	44.5	37	6/20/2002 11:45 PM	61.5	66	36
6/20/2002 3:25 PM	44.2	47	38.5	6/20/2002 11:55 PM	51.9	57.5	32.5
6/20/2002 3:35 PM	41.4	43.5	37.5	6/21/2002 12:05 AM	60	66	32.5
6/20/2002 3:45 PM	42.3	45.5	36.5	6/21/2002 12:15 AM	55.4	60.5	33
6/20/2002 3:55 PM	47.1	50.5	38.5	6/21/2002 12:25 AM	47.2	50.5	37
6/20/2002 4:05 PM	45.6	48	35.5	6/21/2002 12:35 AM	34.8	36	32
6/20/2002 4:15 PM	39.4	41	35	6/21/2002 12:45 AM	53.9	58.5	35.5
6/20/2002 4:25 PM	42.1	44	37	6/21/2002 12:55 AM	35.9	37	33.5
6/20/2002 4:35 PM	47.4	48	36.5	6/21/2002 1:05 AM	34.8	36	32.5
6/20/2002 4:45 PM	43.2	47	37.5	6/21/2002 1:15 AM	51.2	52	31.5
6/20/2002 4:55 PM	46.4	50.5	38.5	6/21/2002 1:25 AM	38.9	37	32.5
6/20/2002 5:05 PM	43	45.5	37.5	6/21/2002 1:35 AM	30.2	33	25
6/20/2002 5:15 PM	45.3	48.5	38.5	6/21/2002 1:45 AM	31.3	33	25.5
6/20/2002 5:25 PM	49.7	51	46.5	6/21/2002 1:55 AM	31.1	33.5	25
6/20/2002 5:35 PM	49.6	50	48.5	6/21/2002 2:05 AM	31.1	35.5	25.5
6/20/2002 5:45 PM	49.4	49.5	47	6/21/2002 2:15 AM	34.2	37.5	26.5
6/20/2002 5:55 PM	49.2	50	47	6/21/2002 2:25 AM	27.9	28.5	24.5
6/20/2002 6:05 PM	49.2	50	47.5	6/21/2002 2:35 AM	27.7	29	24
6/20/2002 6:15 PM	49.4	50.5	47.5	6/21/2002 2:45 AM	36	40	24.5
6/20/2002 6:25 PM	48.7	49.5	47	6/21/2002 2:55 AM	32.9	34	26
6/20/2002 6:35 PM	47.8	48.5	44.5	6/21/2002 3:05 AM	27.4	28.5	24.5
6/20/2002 6:45 PM	47	48	45.5	6/21/2002 3:15 AM	30.9	31	25.5
6/20/2002 6:55 PM	46	47.5	36.5	6/21/2002 3:25 AM	30.7	33	27.5
6/20/2002 7:05 PM	48.1	52.5	44.5	6/21/2002 3:35 AM	30.7	32.5	26
6/20/2002 7:15 PM	47.9	51.5	45.5	6/21/2002 3:45 AM	35.8	38	26.5
6/20/2002 7:25 PM	59	62.5	48.5	6/21/2002 3:55 AM	31.3	34.5	27
6/20/2002 7:35 PM	59.7	63.5	47	6/21/2002 4:05 AM	33.4	37	27
6/20/2002 7:45 PM	56.7	60	44	6/21/2002 4:15 AM	32.9	35.5	28.5
6/20/2002 7:55 PM	44.8	47.5	37.5	6/21/2002 4:25 AM	35.5	37	28
6/20/2002 8:05 PM	42.4	45.5	36.5	6/21/2002 4:35 AM	37.1	37.5	32.5
6/20/2002 8:15 PM	41.7	44	35	6/21/2002 4:45 AM	38.9	39.5	34
6/20/2002 8:25 PM	39.3	42.5	34.5	6/21/2002 4:55 AM	40	41.5	36
6/20/2002 8:35 PM	40.5	42	34	6/21/2002 5:05 AM	40.2	42	35
6/20/2002 8:45 PM	42.8	46.5	34	6/21/2002 5:15 AM	43	46	37

Table NO2-1
10-minute Sound Pressure Levels at Residence on Kirkwood (dBA)

Date & Time	Leq	L10	L90
6/21/2002 5:25 AM	41.2	43.5	36
6/21/2002 5:35 AM	40.2	42.5	34
6/21/2002 5:45 AM	44.5	46	34.5
6/21/2002 5:55 AM	44.2	44	33.5
6/21/2002 6:05 AM	39.9	43	34.5
6/21/2002 6:15 AM	50	49	37
6/21/2002 6:25 AM	46.8	50.5	35.5
6/21/2002 6:35 AM	44.8	45	34
6/21/2002 6:45 AM	49	52	36.5
6/21/2002 6:55 AM	39.3	41	33.5
6/21/2002 7:05 AM	49.9	46	33.5
6/21/2002 7:15 AM	52.6	48	35.5
6/21/2002 7:25 AM	47.1	46.5	35
6/21/2002 7:35 AM	44.6	44.5	35.5
6/21/2002 7:45 AM	44.8	48	36.5
6/21/2002 7:55 AM	42.5	45	35.5
6/21/2002 8:05 AM	41.6	43.5	35.5
6/21/2002 8:15 AM	41	45	35
6/21/2002 8:25 AM	43.7	48	36
6/21/2002 8:35 AM	49.5	50.5	47.5
6/21/2002 8:45 AM	46.3	49.5	34.5
6/21/2002 8:55 AM	51.6	51.5	35.5
6/21/2002 9:05 AM	40.4	41.5	34.5
6/21/2002 9:15 AM	44.1	46.5	34

NO-3. Please discuss the difference in pressure between PG&E's 400/401 line and SMUD's pipeline, the conditions when the compressors would operate, and information about line pressure and noise in the pipeline.

Response: PG&E's guaranteed pressure to SMUD is 600 psig; however, the pipeline often operates higher than this pressure, and that pressure is available to SMUD. Currently SMUD's maximum operating pressure is 700 psig, but the maximum allowable operating pressure in the pipeline can be 787 psig for Class 2 piping and 722 psig for Class 3 piping. If the PG&E supply pressure drops below 722 psig, then the compressors would operate to boost the pressure, yet not exceed the current MAOP of the pipeline. Since the pipeline is buried, there would be no surface noise in the pipeline due to the increase in pressure.

Technical Area: Traffic and Transportation
Author: Kathy Peasha, Intervenor
CPP Author: John Carrier and Kevin Hudson

BACKGROUND

The following questions were asked at the Data Response and Issues Resolution Workshop held on June 11, 2002.

DATA REQUEST

T&T-1. Please look at a completely internal roadway system.

Response: The Applicant reviewed options for an internal roadway system that would keep construction and operational traffic entirely on SMUD property, without any traffic on Clay East Road. In AFC Supplement B, SMUD proposed building a new road between the Rancho Seco Park entrance road and the eastern terminus of Clay East Road, using the eastern portion of Clay East Road to access the site and construction laydown areas. The workshop suggestion was made to build a parallel roadway north, and adjacent to, Clay East Road to keep project-related traffic completely off of Clay East Road. The proposed alignment is adjacent to a fence along a firebreak that is bladed annually. This roadway proposal would cross three ephemeral swales and Clay Creek. In addition, the 24- to 30-foot-wide roadway would involve construction near the culturally sensitive area of the mine tailings and riparian area associated with the mine tailings. Construction near the mine tailings also raises worker health and safety concerns since contaminated soils are often found in connection with old mine tailings. While this roadway disturbance is considered mitigable, it would present and unnecessary disturbance that would contribute to the overall impact of the project. Alternately, SMUD feels that traffic controls can be maintained, as proposed, that keeps the vast majority of construction traffic confined to the east end of Clay East Road, thus avoiding the residential area.

Other route/roadway paths were considered, including a path between Rancho Seco Plant and the construction site (see Data Response PD-2, Kathy Peasha, Set 1). Each route, other than the one proposed in Supplement B, requires crossing Clay Creek, plus several ephemeral streams. Since the proposed laydown area is south of Clay East Road, there appears to be no alternative that would entirely eliminate the use of Clay East Road.

Technical Area: Visual Resources and Plumes
CEC Author: Michael Clayton
CPP Author: Wendy Haydon

BACKGROUND

The following questions were asked at the Data Response and Issues Resolution Workshop held on June 13, 2002.

DATA REQUEST

VIS-1. The proposed power plant would be visible from KOP 2. Evaluate the feasibility of planting trees along the west side of the power plant to screen views of the plant's features from KOP 2 by preparing either line-of-sight drawings or visual simulations. Evaluate only evergreen species.

Response: To evaluate the feasibility of vegetative screening along the west side of the power plant, three lines-of-sight were drawn and evaluated, as follows.

Figure 8.11-6 was prepared that shows the relative locations of the KOP 2 residence and the proposed power plant, using a 7.5-minute quadrangle map as the base. Three straight lines were drawn from KOP 2 to the power plant. The first line connects KOP 2 to the northwest corner of the power plant site. This line is referred to as Line-of-Sight "A". A second line connects KOP 2 to the midpoint of the western boundary of the power plant site; this line is referred to as Line-of-Sight "B". A third line connects KOP 2 to the southwest corner of the power plant site. This line is referred to as Line-of-Sight "C".

"X"s were marked along the lines-of-sight on Figure 8.11-6 where they crossed contour lines shown on the quadrangle map. Eleven Xs were marked along each line-of-sight. The three lines-of-sight were then plotted as graphs. Figure 8.11-7 shows the line-of-sight for "A"; Figure 8.11-8 shows the line-of-sight for "B"; and Figure 8.11-9 shows the line-of-sight for "C".

The vertical axis on these three figures represents elevation in feet. The horizontal axis represents distance in feet. The KOP 2 residence was plotted at its approximate ground surface elevation, the western boundary of the plant site was plotted at its approximate ground surface elevation along the three sight lines, the elevations of the Xs (from Figure 8.11-6) along the three lines-of-sight were plotted, and the height of the tallest project feature was plotted (the 165-foot-high stacks). These plots are shown as the dots on the graph, and a line was connected to each dot to represent the ground surface elevation along that line-of-sight. The horizontal and vertical scales on these three figures are the same, so the

figures show the relatively little difference in height of the stacks compared to the KOP 2 residence, when viewed from a distance of over a mile away.

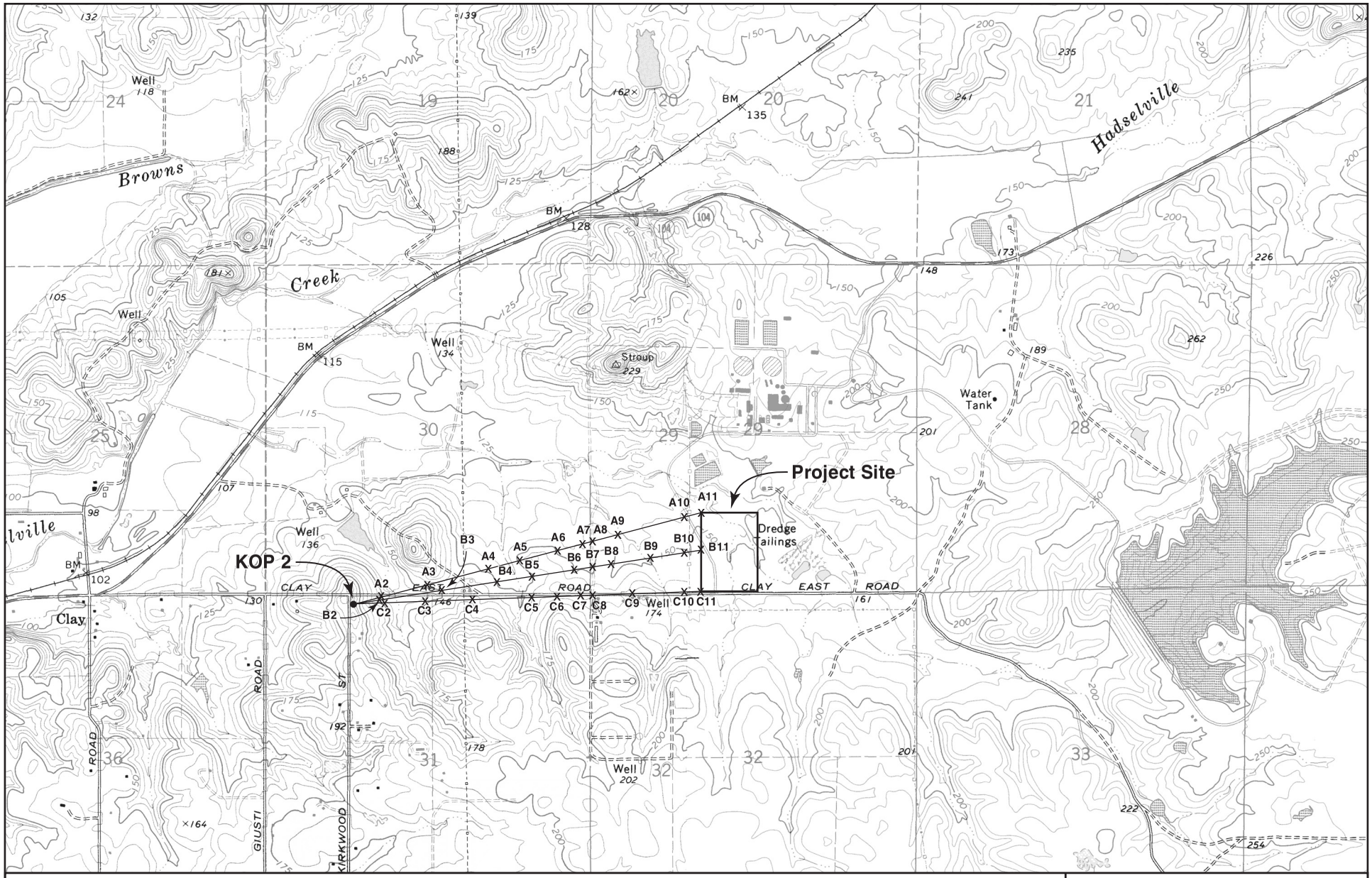
Insets are also shown on Figures 8.11-7 and 8.11-8 that show a closer view of the lines-of-sight from KOP 2 toward: (1) the plant site ground surface elevation, (2) the brine concentrator (the second tallest project feature), and (3) the stacks (the tallest project features). The lines-of-sight are shown on the figures as dashed lines.

As shown on the insets of Figures 8.11-7 and 8.11-8, receptors at KOP 2 would have an unobstructed view of the proposed power plant and the stacks, and the tops of the stacks would be at a substantially higher elevation than the KOP 2 receptors (approximate 117 to 126 feet higher). Trees planted to the west of the existing transmission line towers (at A10 on Figure 8.11-7 and at B10 on Figure 8.11-8) would have to be approximately 158 feet tall to completely screen views of the stacks along line-of-sight "A", and would have to be approximately 162 feet tall to completely screen views of the stacks along line-of-sight "B".

If trees were planted at SMUD's western property boundary (shown as A8 on Figure 8.11-7 inset and B7 on Figure 8.11-8 inset), the trees would have to be approximately 125 feet tall to screen views of the stacks along line-of-sight "A", and approximately 129 feet tall to screen views of the stacks along line-of-sight "B".

To screen the views along line-of-sight "A" or "B" of all of the project features except the top portions of the stacks, trees planted at SMUD's western property boundary (at A8 or B7) would have to grow to approximately 75 feet tall.

Certain species of eucalyptus and sequoia grow quickly, have the potential to thrive in the project area, and therefore, could screen views of the project from KOP 2. Assuming that 8-foot-tall trees are planted along SMUD's western property boundary, at 10 years, the trees would be approximately 41 feet tall. At 20 years, the trees would be approximately 74 feet tall, which would screen all project features except the top portions of the brine concentrator and stacks. At 30 years (which marks the end of the project's life), the trees would be approximately 107 feet tall, at which time the only top portions of the stacks would be visible from KOP 2.As shown on Figure 8.11-9, the southwestern corner of the project site is not visible from KOP 2 due to intervening topography. Stacks and other large project features would not be constructed at this corner, so screening at this location is not necessary.



1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

FIGURE 8.11-6
MAPPED LINES-OF-SIGHT "A", "B", AND "C"
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION

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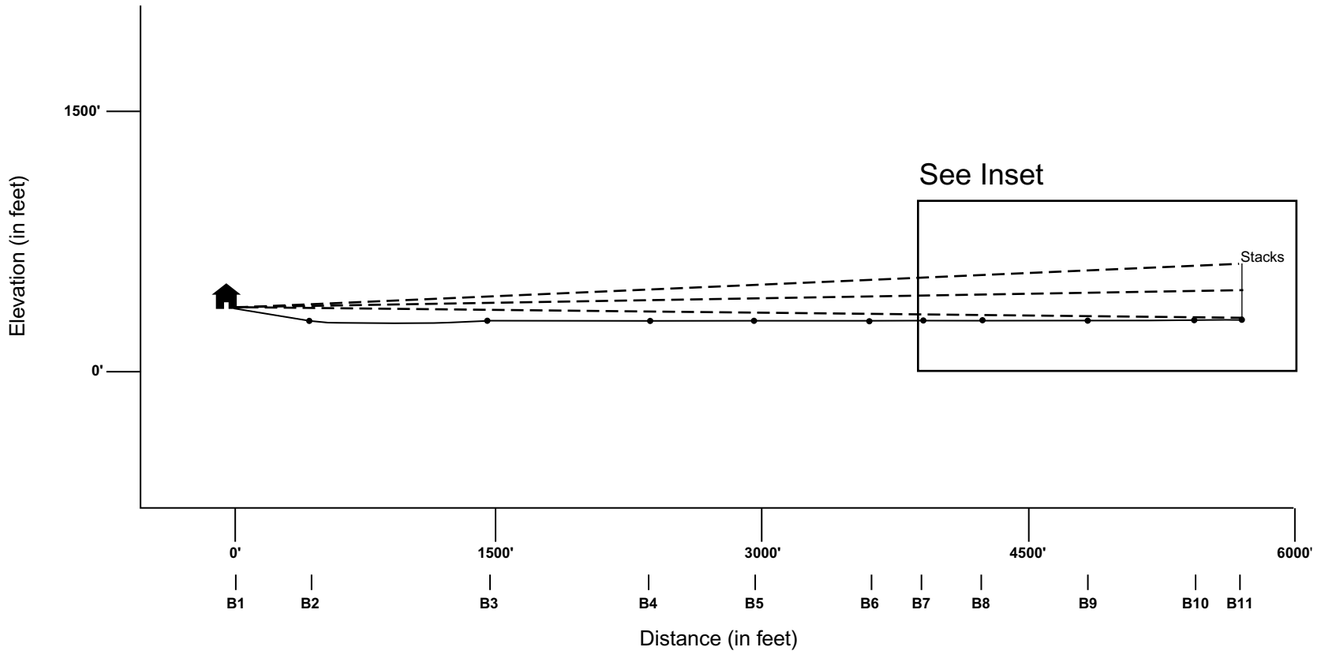
Cosumnes Power E042002006SAC exhibit001-mapped lines.ai 6/27/02 esm



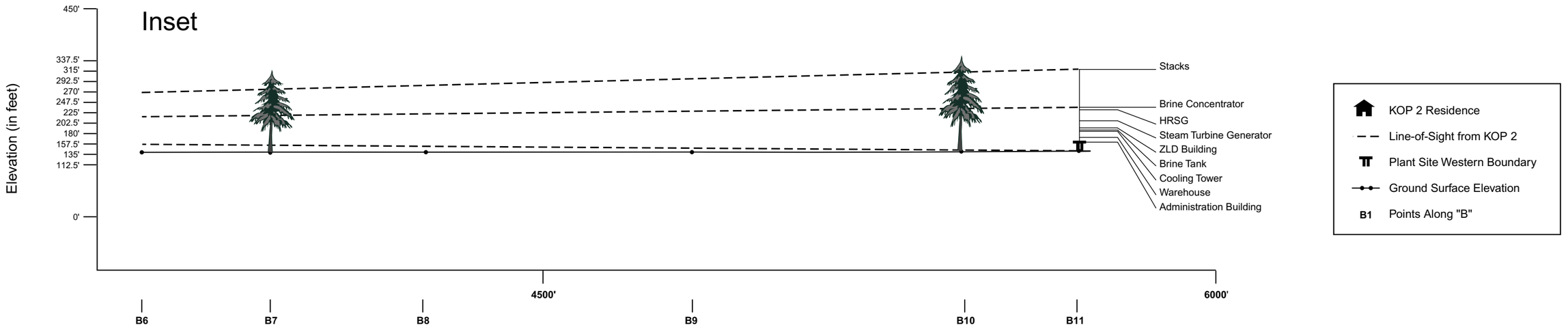
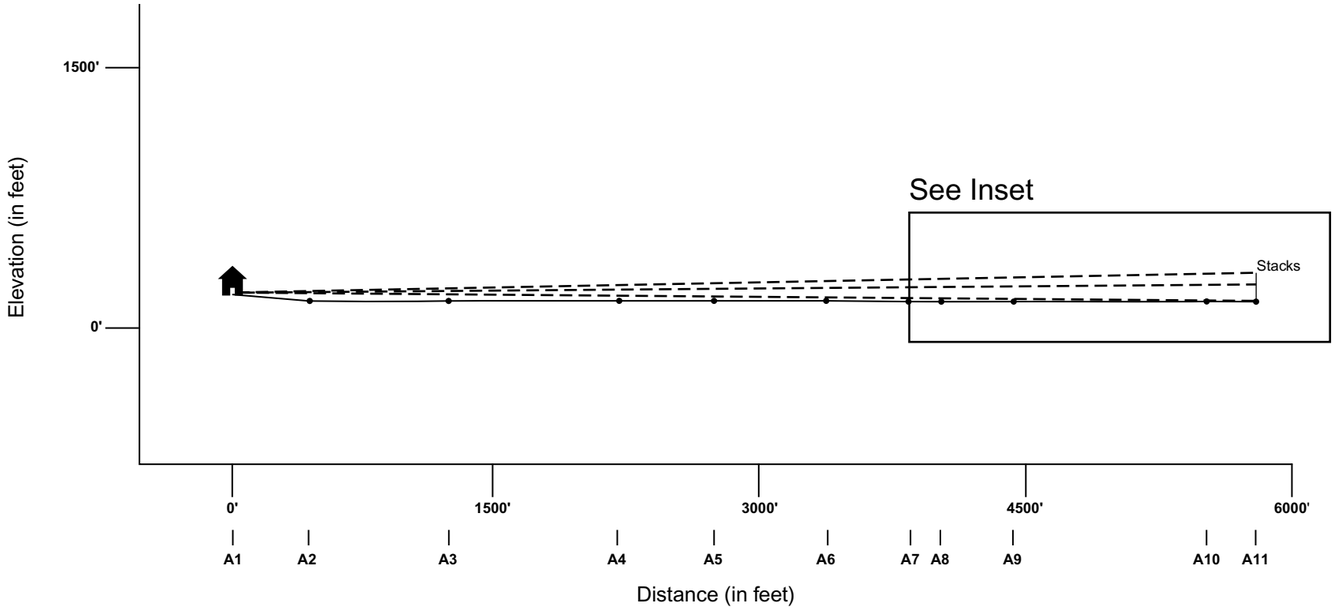


FIGURE 8.11-8
LINE-OF-SIGHT ALONG "B"
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION

CH2MHILL

Cosumnes Power E042002006SAC exhibit003-lineB.ai 6/27/02 esm



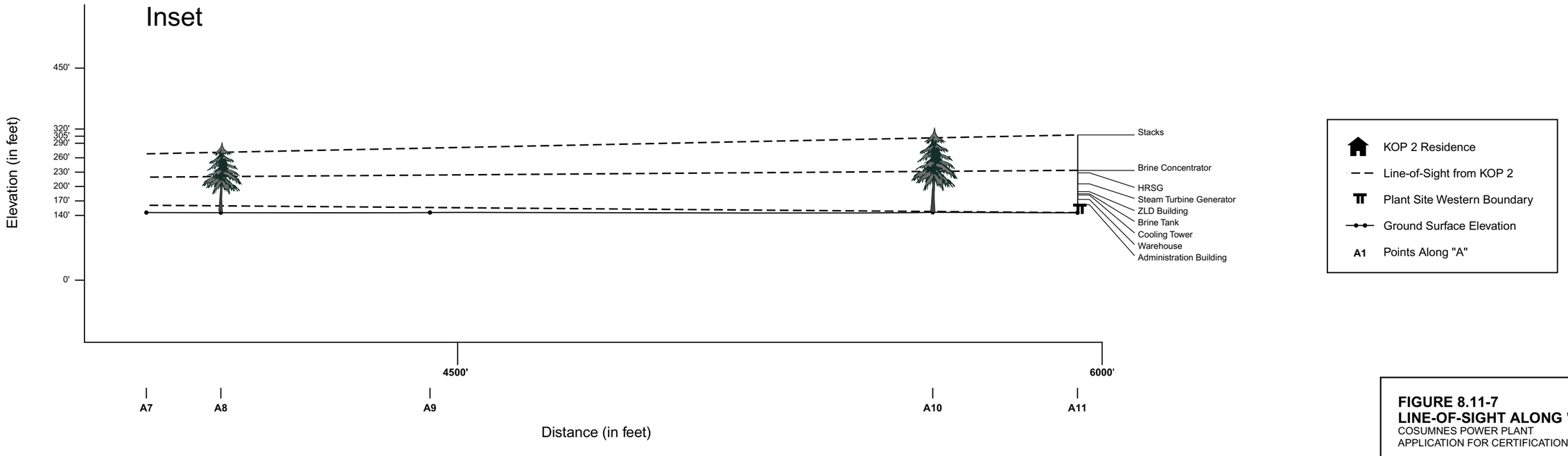
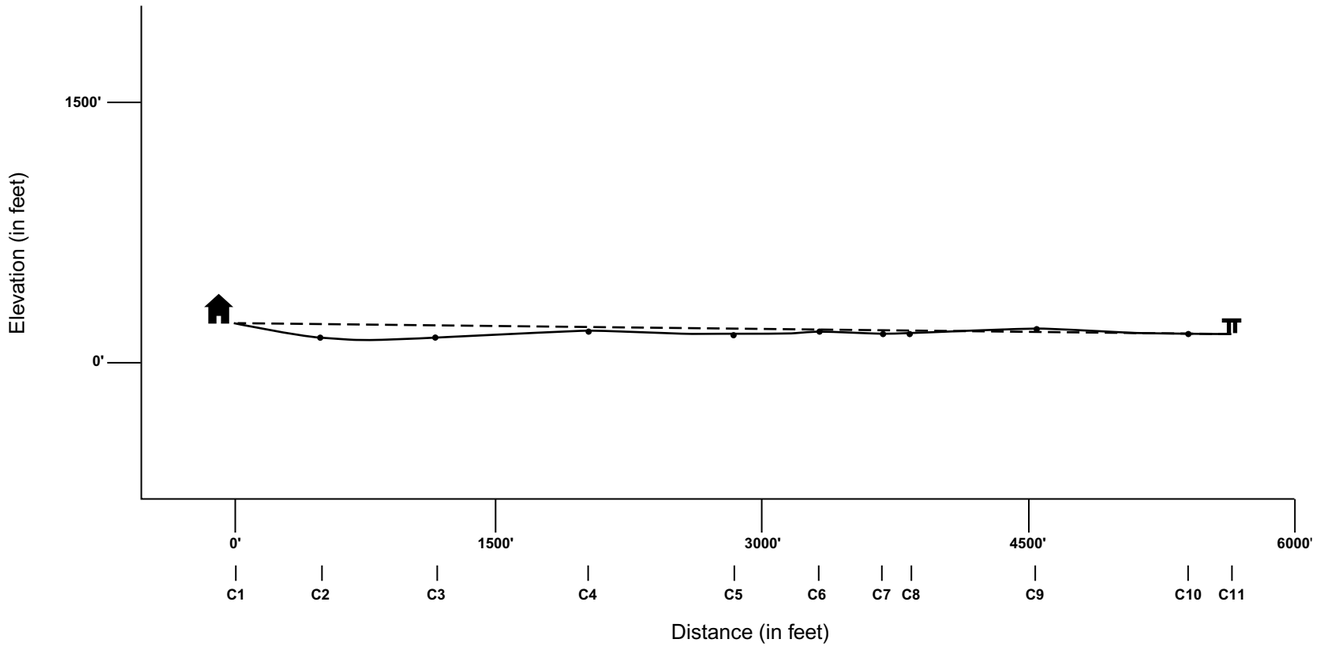


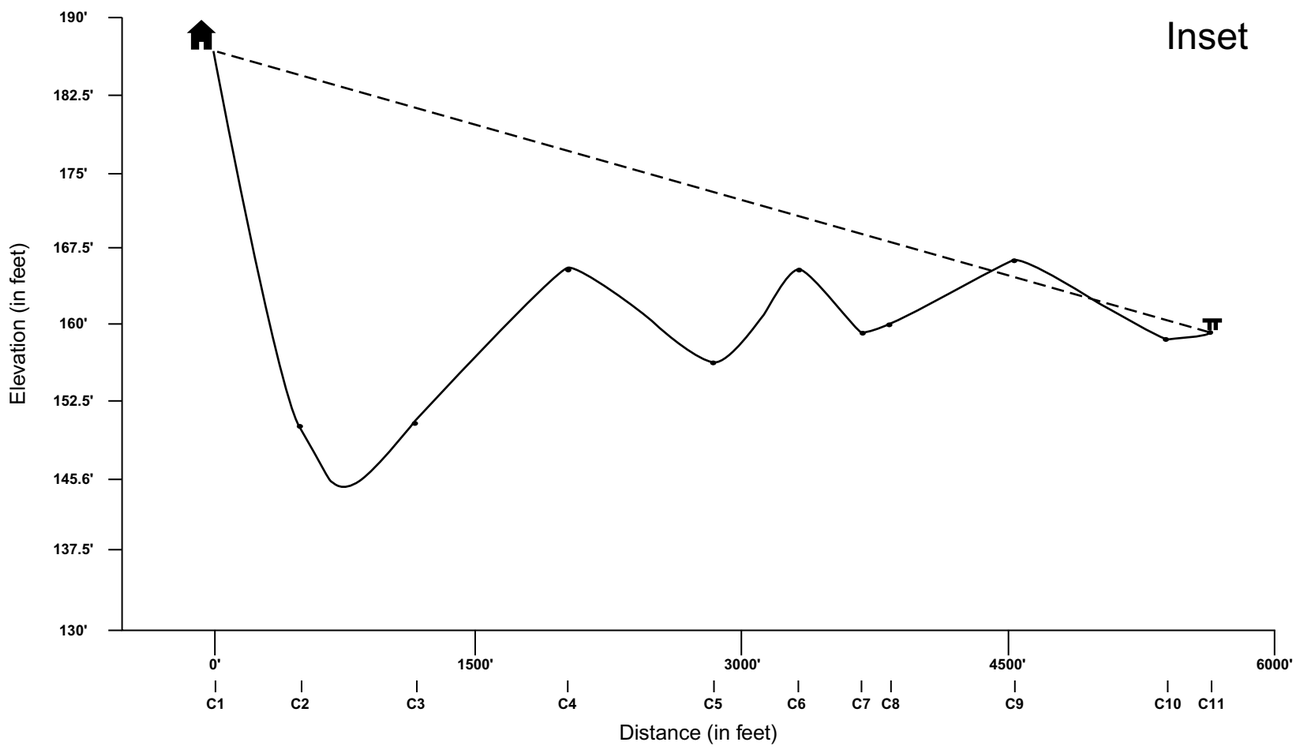
FIGURE 8.11-7
LINE-OF-SIGHT ALONG "A"
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION

CH2MHILL

Cosumnes Power E042002006SAC exhibit002-lineA.ai 6/27/02 esm



Inset



Note: Scale is enlarged for illustrative purposes.

KOP 2 Residence
Line-of-Sight from KOP 2
Plant Site Western Boundary
Ground Surface Elevation
C1 Points Along "C"

FIGURE 8.11-9
LINE-OF-SIGHT ALONG "C"
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION

CH2MHILL

Cosumnes Power E042002006SAC exhibit004-lineC.ai 6/27/02 esm

Technical Area: Water and Soil Resources
CEC Authors: Richard Latteri, Philip Lowe, P.E., and Greg Peterson, P.E.
CPP Author: EJ Koford, Mark Tompkins, Steve Brock

BACKGROUND

The following questions were asked at the Data Response and Issues Resolution Workshop held on June 12, and conference call on June 14, 2002.

DATA REQUEST

W&SR-1. Please work with staff to establish a standard set of assumptions for alternative technology costs.

Response: SMUD used a combination of vendor quotes, experienced construction cost-estimator rules of thumb, and Richardson and Means cost-estimating handbooks to develop costs for alternatives, including the zero-liquid discharge system and reclaimed water pipelines. These costs and assumptions are presented in Data Responses, Set 1E, Appendix B. According to SMUD's engineers (PB Power and Utility Engineering) the cost for a ZLD system is roughly $13 million. Operation of a ZLD system is similar to a small chemical plant, requiring an extra staff member, changing of RO membranes and equipment, constant control of water chemistry, energy cost, and waste management of the salt cake. SMUD calculated the Net Present Value costs over a 30 year plant life in order to compare the various technologies. Dry cooling equipment costs were obtained from vendor estimates. Energy replacement costs for the dry cooling energy penalty is driven by the price of natural gas, whose calculation is shown on appendix page B-5 of Data Responses, Set 1E. For verification, these costs were compared with independent USEPA data and corresponded with their wet to dry cooling ratio.

From Richardson estimating handbooks, trenching costs for a natural gas pipeline is estimated at $12.74 per foot, while a separate waterline trench is $11.39 per foot. A common excavation is $25.56 and makes allowance for a 1-foot minimum separation between piping. Note that for safety, and operation and maintenance reasons, SMUD would not install a natural gas pipeline in the same trench as a water pipeline. There could also be opportunity to construct a water and natural gas pipeline in the same easement; however, wider, or additional easements may be required where either landscape or construction methods require divergence and further separation of the pipelines. The cost of installing a reclaimed water line, including allowance for road and river crossings, rights-of-way, soil conditions, labor, coating, cathodic protection, fittings, trench, fill and contingency, is slightly less than $200 per foot.

Maintenance and operational costs for pipelines were taken as a percentage of the installed cost, while maintenance and operational costs for a ZLD system was taken as a percentage of the equipment cost. These percentages are provided in Data Responses, Set 1E, Appendix B.

W&SR-2. Please revise Figure W&SR 250a to show, on a topographic base, the plant site plan, laydown area and rerouted drainages

Response: This figure is being prepared and will be available on July 18, 2002.

W&SR-3. Please provide a set of the HEC modeling data files.

Response: The HEC modeling files were emailed to Phil Lowe and Richard Latteri on June 14, 2002. Three floppy disks containing the files are being submitted to the CEC.

W&SR-4. Please provide HEC 1 hydraulic calculations to show how flow will be accommodated.

Response: To the south of Clay East Road there is a water shed area that contributes flow to two existing culverts that currently discharge into the area that will become the plant site. The current concept for handling the flow from these two culverts is a follows: On the north side of Clay East Road between the plant and the road, divert the discharge from eastern culvert around the southern plant boundary and discharge into Clay Creek and divert the discharge from western culvert to the west and then along the western plant boundary to ultimately discharge into Clay Creek.

The watershed area that contributes flow to these two culverts at the plant was established from topographical maps and field investigation. This area is referred to as the eastern tributary basin. By using the Rational Method for a 100-year storm (see Attachment W&SR-4 for the calculations), it was determined that peak runoff from the eastern tributary basin would be 45 cfs (cubic feet per second). This rate of flow cannot be handled by the two existing 16-inch x 25-inch CMP (corrugated metal pipe) culverts that go under Clay East Road without backing up water and potentially overflowing the roadway. By adding additional culvert capacity, the 45 cfs can be handled without a resulting backing up of stormwater runoff. The required capacity is accomplished by adding two additional 16-inch x 25-inch CMP culverts adjacent to the eastern culvert (with 1-foot separation) and one additional 16-inch x 25-inch CMP culvert adjacent to the western culvert (also with 1-foot separation). With the additional capacity, the peak flow velocity through the culverts will be 4 feet per second (fps). There is adequate elevation of the road to easily accomplish the proper installation of the additional culverts.

Culverts (or open trenches) on the north side of Clay East Road will be sized to handle a capacity greater than the culverts that discharge into them.

This design incorporating a total of five 16 x 25 CMP culverts will be more than adequate to properly route the stormwater from a 100-year storm safely around the plant.

W&SR-5. Please determine if there is a requirement that the project have a detention basin.

Response: SMUD doesn't believe that a detention basin is required, but we are still trying to verify this information.

W&SR-6. If the detention basin remains, please verify the correct height of free-board required.

Response: If it is determined that the detention basin is required, the height of the free-board will be verified.

W&SR-7. Please provide the Bay Area design guidelines for stormwater.

Response: A copy of these BMPs was faxed to Phil Lowe of Aspen and on 24 June 02.

W&SR-8. Please provide a description of the alternative site configurations that lead to the current general arrangement.

Response: The Applicant had numerous considerations and criteria in determining the best location for the plant within SMUD's 2,480-acre area. These considerations are summarized in Data Response #6, Set 1A. Once the site was chosen, the engineering team worked to arrange the equipment within the site that would result in the smallest possible footprint and provide optimum layout for all considerations. These considerations are summarized in Data Response #243, Set 3A.

The engineering team looked at the following distinct site arrangements to avoid the northeast corner of the site, provide a 100-foot setback from the edge of the creek to the toe of the site, and avoid the southern reach of Clay Creek.

- The primary piece of equipment in the northeast section of the site is the Phase 1 cooling tower. From an engineering standpoint, the cooling tower needs to be relatively close to the steam turbine, with very few piping turns in the duct bank. Aside from this, the engineering team considered placing the cooling tower in other locations, including adjacent to, and east of, the Phase 2 cooling tower, north of the site, west of the site, or angling the cooling tower at a

45-degree angle. It was determined that placing the cooling tower east of the Phase 2 cooling tower would also require fill in the southern reach of Clay Creek, encroach upon the mine tailing area, and be closer to the biological habitat associated with the mine tailing area; therefore, this rearrangement was not suitable. Placing the cooling tower north of the site would also require fill, and be closer to the main artery of Clay Creek; therefore, this rearrangement was not suitable. Placing the cooling tower to the west of the site would place it in the proximity of existing transmission lines and would require fill and re-routing another ephemeral stream further to the west of the site; therefore, this arrangement was not suitable. The engineering team considered re-orienting the cooling tower at a 45-degree angle, which means moving it slightly north to avoid the administration building. Since the cooling tower must be placed in a manner that will still allow spacing for maintenance of the other major equipment, it was determined that a slightly greater amount of fill would be required in order to accommodate the slope and stabilization required; therefore, this rearrangement was not suitable.

- The engineering team attempted to reduce the spacing between major equipment to reduce the overall plant footprint. The current spacing could not be reduced further for two primary reasons. First, there was not enough space to accommodate flexibility and expansion for the steam piping between the boiler and steam generators. Second, reducing the spacing would not allow enough room for construction, cranes, and laydown for maintenance/overhaul of the major pieces of equipment. Therefore, fill would still be required.

- The engineering team also looked at re-orienting the major equipment in an east-west arrangement, with the switchyard on the northern side of the plant and the cooling towers to the south side. This orientation did not reduce the footprint size, and introduced a potential visual and noise concern of having the cooling towers parallel and adjacent to Clay East Road and closer to the residential areas. The northeast corner would still need to be filled in this scenario.

- Currently, and with the consideration of incorporating a zero-liquid discharge unit for each phase, there does not appear to be space to accommodate rearrangement of the site to avoid filling the northeast corner and also have room that allows for construction and maintenance.

Since the site could not be successfully arranged to wholly avoid filling the southern reach of Clay Creek, the Applicant took CEC staff suggestions under advisement and made the following changes in site orientation to minimize impacts to the creek. The comparison is made

between the original site plot plan filed in the AFC (Figure 2.2-1) and the current site plot plan filed in AFC Supplement A, plus changes anticipated in the upcoming AFC Supplement C, which will analyze potential impacts from the zero-liquid discharge system.

- The major equipment (steam turbines, combustion turbines) has been moved as close as possible to the switchyard roadway in an attempt to reduce footprint size.
- The leach field has been relocated from outside the northern perimeter fence to an area central to the site, west of the administration building.
- The sanitary wastewater treatment building has been moved from the northern-most side of the site to an area west of the administration building.
- The firewater pump has been relocated from the northeast corner to just east of the Phase 1 steam turbine generator.
- The oil/water separator has been enlarged and moved from the northeast corner to the central north perimeter. This will ensure drainage and collection is more central to the plant and farther away from Clay Creek.
- The D.I. water treatment building has been relocated to the west, further from the creek, and the administration building and offices moved to where the water treatment building was located.
- The wastewater sump has been removed from the northeast corner of the site to avoid potential seepage.

Attachment W&SR-4

TECHNICAL MEMORANDUM CH2MHILL

Estimation of 100-year discharge for Clay Creek tributaries using the rational method

PREPARED FOR: EJ Koford
John Carrier
PREPARED BY: Mark Tompkins
Jennifer Maio
DATE: June 27, 2002

Request: Please provide 100-year discharges for the Clay Creek tributaries that will be diverted by the CPP using the rational method.

Response: We estimated the 100-year peak discharges for the Clay Creek tributaries that will be diverted by the CPP using the rational method (as described in Dunne and Leopold 1978).

We delinieated areas for the "east " and "west" tributaries to Clay Creek (Figure 1) on the United State Geological Survey (USGS) Goose Creek and Clay Quadrangles. The drainage areas were measured with a planimeter as 125 and 194 acres, respectively. *Note – A field investigation conducted after this document was prepared confirmed that only the East Tributary will be diverted by the CPP.*

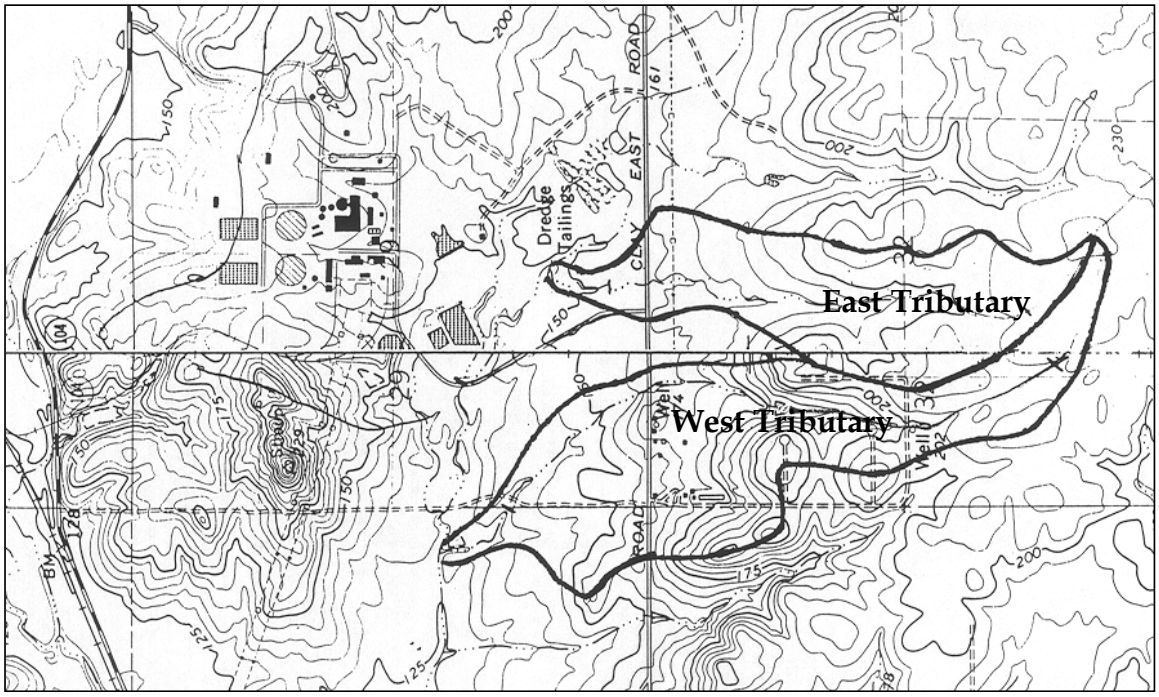


Figure 1: East and West Tributary locations (shown on USGS Goose Creek Quad)

Attachment W&SR-4

We also measured the basin lengths for each tributary from the project site to the drainage divide following the principal channel. The basin lengths were calculated as 6,000 and 8,600 feet for the east and west tributaries, respectively. The relief of each basin (100 and 120 feet, respectively) was determined by taking the difference between the elevation at the project site and the elevation at the drainage divide. The average annual rainfall for the Rancho Seco Nuclear Power Plant was calculated as 16.72 inches by computing the mean of the total annual rainfall recorded by the East Bay Municipal Water District at Clay Ranch from 1931 through 1980.

The rational method uses the following equation to calculate the peak discharge for a 100-year event:

$$Q = CIA$$

where Q is the peak discharge (cfs); C is the rational runoff coefficient; I is the rainfall intensity (in/hr); and A is the drainage area (ac). The rational runoff coefficient was determined to be 0.49. This coeffieicent applies to undeveloped pasture / range land with an average slope of two to seven percent (Chow 1988). The land use and topography within both the east and west tributary basins reflected this description.

To estimate the rainfall intensity, it was first necessary to estimate the time of concentration of each basin using the formula:

$$t_c = \frac{L^{1.15}}{7700 H^{0.38}}$$

where t_c is the time of concentration (hr); L is the basin length (ft); and H is the relief of the basin (ft) (Dunne and Leopold 1978). The time of concentration (t_c) and annual average rainfall were applied to the table developed by Rantz (1971) to determine the rainfall intensity (I) for each basin.

Table 1 summarizes the input and results of the rational method for each tributary to Clay Creek. The 100-year discharge for the east tributary was calculated as 45 cfs and the 100-year discharge for the west tributary was calculated as 80 cfs.

Attachment W&SR-4

TABLE 1
Rational Method Summary Table

Tributary	Drainage Area (acres)	Rational Runoff Coefficient	Time of Concentration (hr)	Rainfall Intensity (in/hr)	Discharge (cfs)
East	125	0.49	0.5	0.180	45
West	194	0.49	0.7	0.173	80

Note – Only the East tributary will be diverted by the CPP.

References

Chow, V.T., D.R. Maidment, and L.W. Mays. 1988. Applied Hydrology. McGraw Hill, Inc. New York. 572 pages.

Dunne, T. and L.B. Leopold. 1978. Water in Environmental Planning. W.H. Freeman and Company. New York, 817 pp.

Rantz, S.E. 1971. Suggested criteria for hydrologic design of storm-drainage facilities in the San Francisco Bay region, California. US Geological Survey Open-File Report, Menlo Park, California.